

# **EXHIBIT 3**

## CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

**Plaintiff's Disclosure of Asserted Claims and Preliminary Infringement Contentions<sup>1</sup>**

<b>Claim Limitation</b>	<b>Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K</b>
1. A semiconductor light-emitting device comprising:	<i>Accused component: Bulbrite 770591 LED4G9/27K/120/F/D T6 4.5W LED G9 2700K 120V Dimmable Frost</i> <i>Basis of Infringement Contention: The Bulbrite 770591 T6 4.5W LED G9 2700K contains a semiconductor light-emitting device</i> <i>Photograph of Bulbrite 770591 T6 4.5W LED G9 2700K</i>

<sup>1</sup> Plaintiff provides these infringement contentions before obtaining discovery from Defendant. Plaintiff expects that Defendant and/or third parties will produce information regarding Defendant's instrumentalities beyond that which is publicly available. Accordingly, Plaintiff reserves the right to modify these infringement contentions based upon Defendant's document production and/or other information made available to Plaintiff through discovery.

Plaintiff's infringement contentions are intended to explain Plaintiff's theories of infringement and do not constitute evidence. Plaintiff's infringement contentions are not intended to set forth a *prima facie* case of infringement or evidence in support thereof. Certain portions of the chart below may apply to more than one Accused Instrumentality. Certain portions of the chart below may reference other charts, and may be referenced by other charts.

The Accused Instrumentalities often practice the claim elements in numerous alternative ways in accordance with the present chart. The Accused Instrumentalities should be assumed to act alone or in combination as referenced herein and interpreted in the singular or plural accordingly. Defendant further provides the Accused Instrumentalities as well as the instructions to customers/users causing them to use the Accused Instrumentalities in an infringing manner, including, without limitation, in their default and expected uses.

Each element of this claim, except where noted otherwise, and each element of the asserted claims dependent thereon, is present literally or under the doctrine of equivalents in the Accused Instrumentalities. To the extent each element of this claim, and the asserted claims dependent thereon are not present literally in the Accused Instrumentalities, each element is present under the doctrine of equivalents because there is no substantial difference between the elements of the asserted claims and the corresponding functionality in the Accused Instrumentality, i.e., the corresponding functionality in the accused product performs substantially the same function, in substantially the same way to achieve substantially the same results as the claimed elements.

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p>Box</p> 
	<p>Box label</p> 

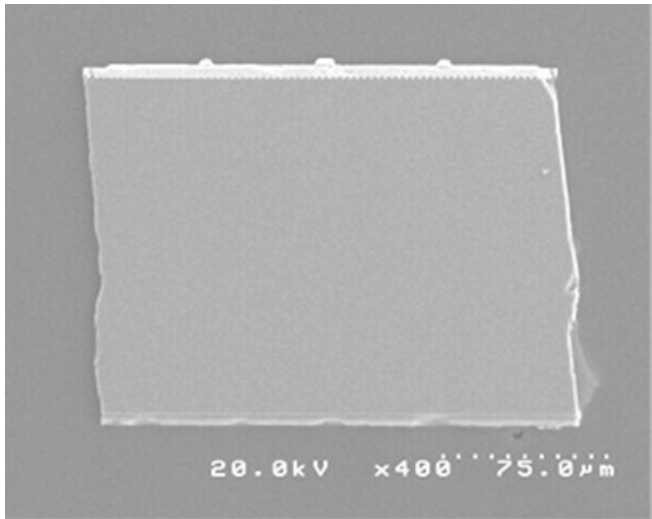
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="573 280 653 313">Lamp</p> 
	<p data-bbox="573 829 766 862">Lamp marking</p> 

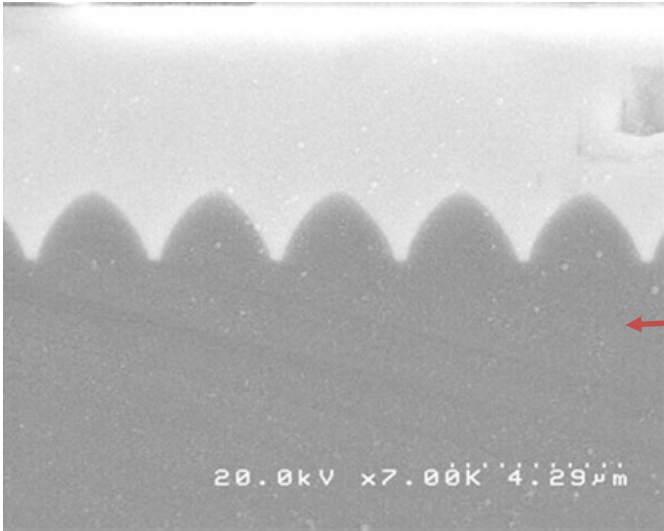
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p>Cap removed</p> 
	<p>LED chip</p> 

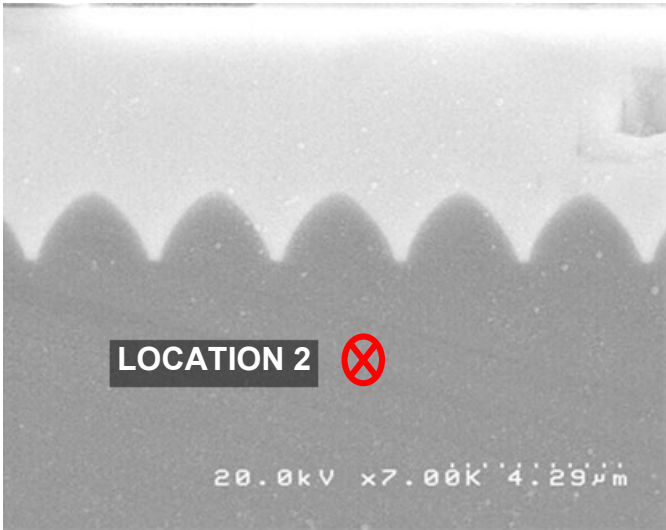
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="573 277 1436 313"><i>Scanning Electron Microscope (SEM) image of LED cross-section:</i></p> 

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

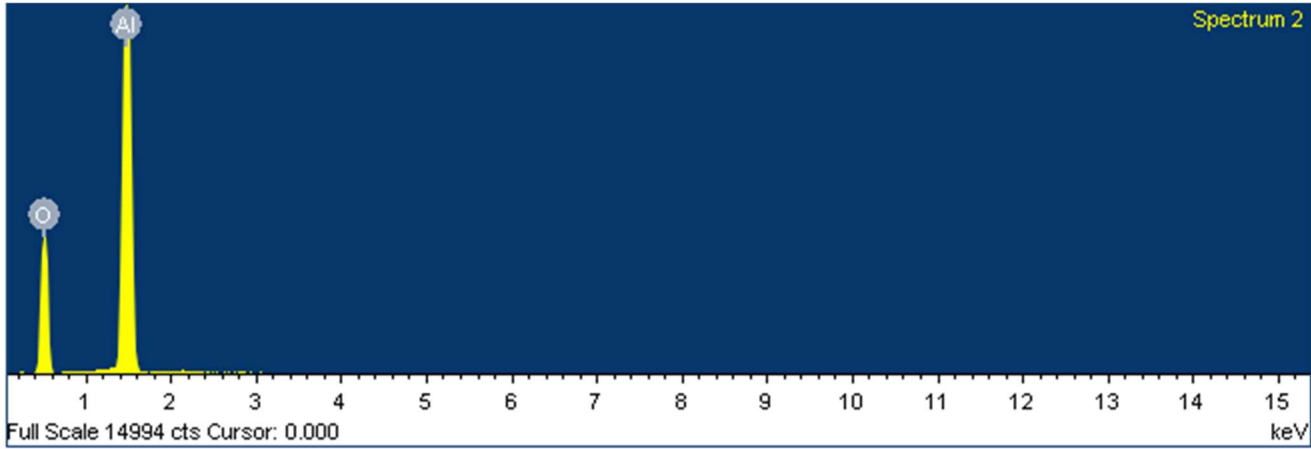
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
a substrate;	<p><i>Accused component: Substrate of the LED in the lamp.</i>  <i>Basis of Infringement Contention: The LED contains a substrate.</i>  <i>SEM Cross-Section of the LED:</i></p>  <p>20.0kV x7.00k 4.29µm</p> <p>Substrate</p>

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

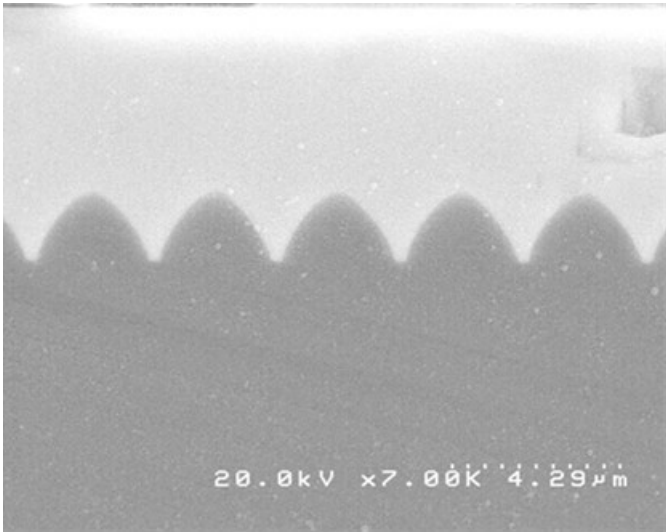
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p><i>SEM Cross-Section of the LED Identifying the Location of the EDX Measurement:</i></p> 



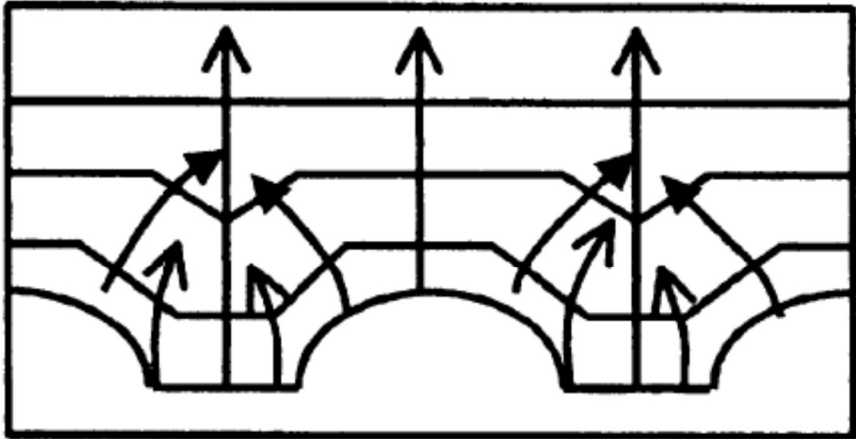
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

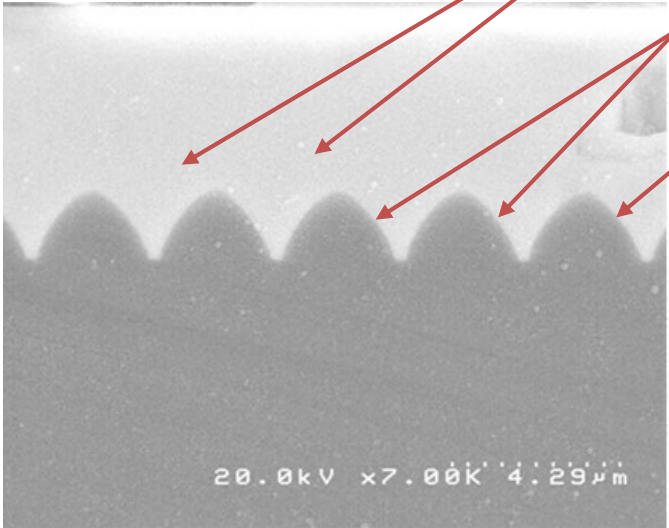
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="575 277 961 310"><i>EDX Analysis of Substrate:</i></p>  <p data-bbox="785 867 1360 915"><b>Substrate is Sapphire (<math>\text{Al}_2\text{O}_3</math>)</b></p>

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

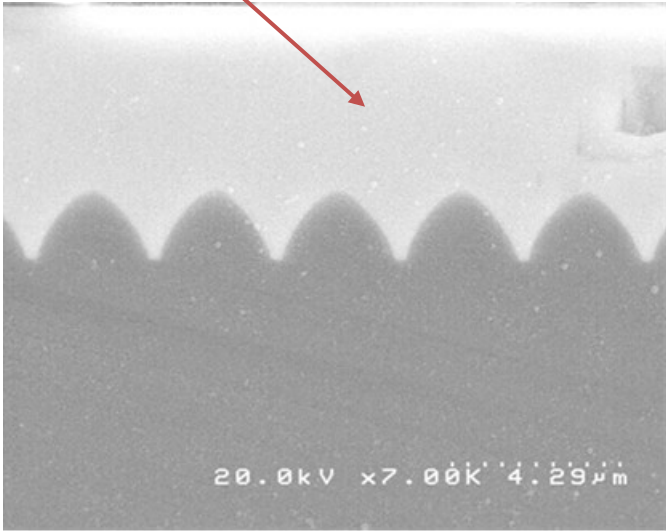
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
a textured district defined on the surface of said substrate	<p data-bbox="575 280 1283 313"><i>Accused component: Substrate of the LED in the lamp.</i></p> <p data-bbox="575 316 1997 386"><i>Basis of Infringement Contention: The substrate of the LED contains a textured district defined on the surface of said substrate.</i></p> <p data-bbox="575 389 982 422"><i>SEM Cross-Section of the LED:</i></p> <div data-bbox="575 457 1236 985"><p data-bbox="785 917 1199 943">20.0kV x7.00k 4.29µm</p></div> <p data-bbox="1325 625 1640 711">← Textured District</p>

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

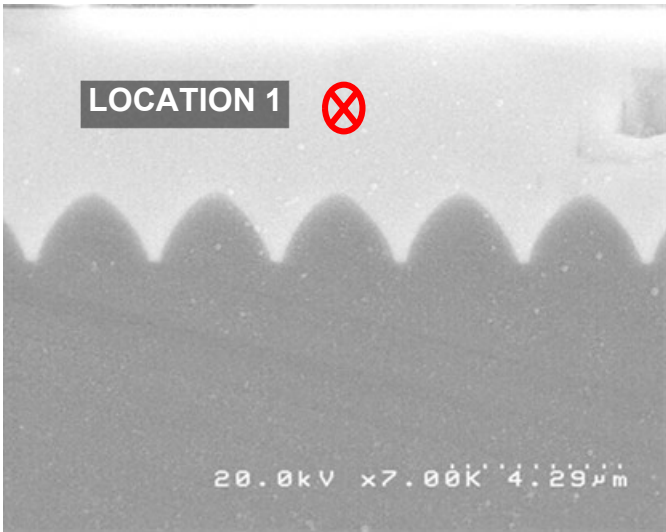
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="575 282 1218 318"><i>Figure 2B from U.S. Patent No. 6,936,851:</i></p> <div data-bbox="611 464 1743 899"><p data-bbox="1625 493 1743 545">— 24C</p><p data-bbox="1625 639 1743 691">— 22B</p><p data-bbox="1625 802 1743 854">— 20A</p></div> <p data-bbox="953 938 1146 1000">Fig. 2B</p>

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
<p>comprising a plurality of etched trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination;</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i>  <i>Basis of Infringement Contention: The textured district comprises a plurality of etched trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination.</i></p> <p>The plurality of etched trenches has sloped etching profiles with a smooth rotation of micro-facets.</p> <div data-bbox="575 495 1881 1214">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>Sloped etching profile (the etched sloped sides of the trench). The sloped etching profile contains a smooth rotation of microfacets.</p> <p>Without a prescribed angle of inclination (the sloped etching profile is without a constant angle of inclination)</p> <p>20.0kV x7.00k 4.29µm</p> </div>

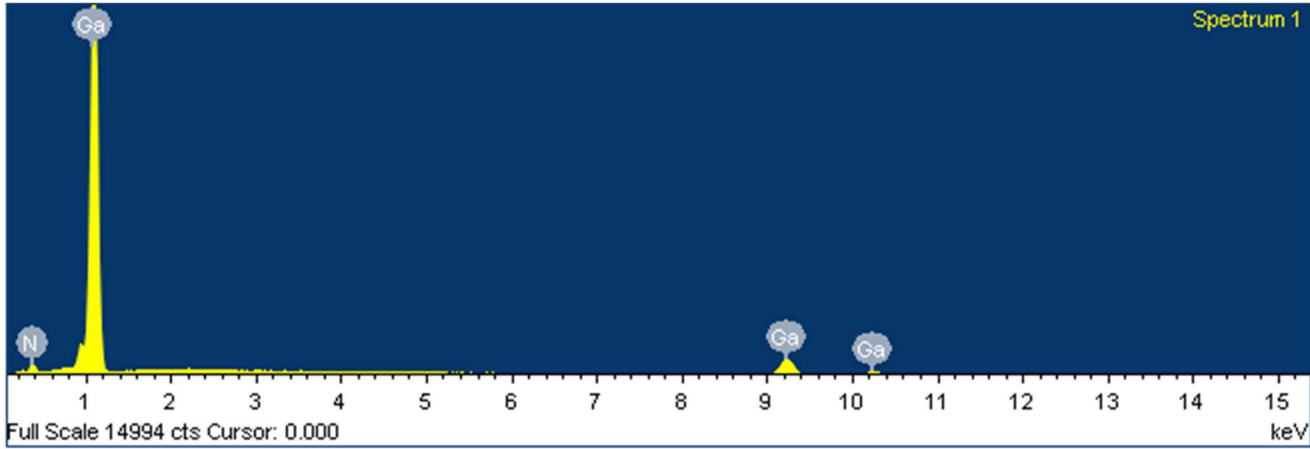
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

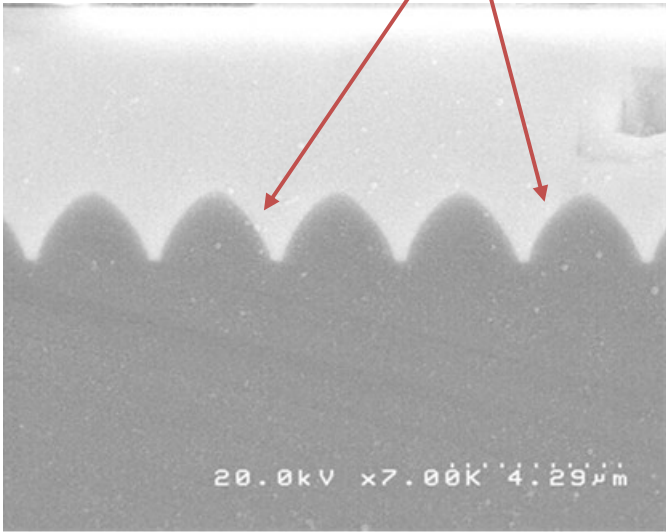
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
a first layer disposed on said textured district;	<p data-bbox="575 280 2005 386"><i>Accused component: The LED in the lamp.</i> <i>Basis of Infringement Contention: The LED comprises a first layer disposed on said textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p data-bbox="575 391 1419 435"><b>The first layer is disposed on the textured district.</b></p> 

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="575 277 1730 313"><i>SEM Cross-Section of the LED Identifying the Location of the EDX Measurement:</i></p>  <p data-bbox="657 423 856 459">LOCATION 1</p> <p data-bbox="890 423 940 477">✗</p> <p data-bbox="785 805 1199 833">20.0kV x7.00k 4.29µm</p>

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

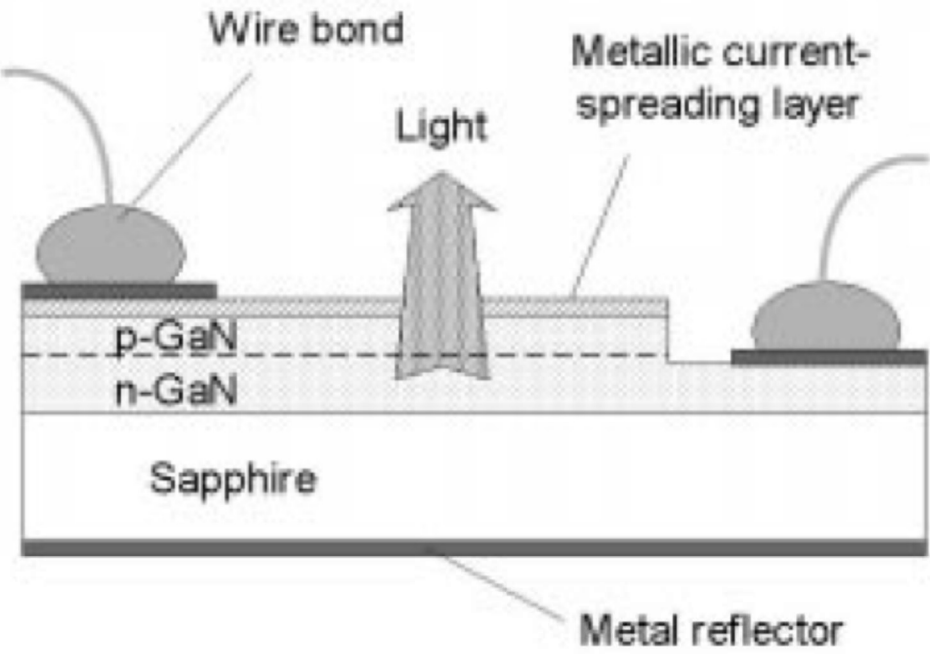
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="575 279 976 311"><i>EDX Analysis of First Layer:</i></p>  <p data-bbox="863 857 1560 906"><b>First Layer is Gallium Nitride (GaN)</b></p>

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
comprising a plurality of inclined lower portions,	<p data-bbox="575 279 2007 349"><i>Accused component: The first layer disposed on said textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p data-bbox="575 354 1934 423"><i>Basis of Infringement Contention: The first layer comprises a plurality of inclined lower portions so as to guide the extended lattice defects away from propagating into the active layer.</i></p> <p data-bbox="575 428 1528 472"><b>The first layer has a plurality of inclined lower portions.</b></p> 

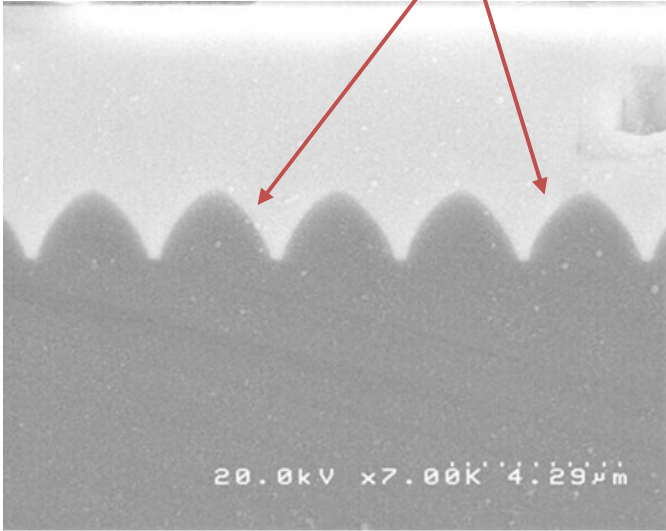


Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
said first layer and said substrate form a lattice-mismatched misfit system,	<p><i>Accused component: The LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The first layer and said substrate of the LED form a lattice-mismatched misfit system.</i></p> <p>The Gallium Nitride first layer and Sapphire (<math>\text{Al}_2\text{O}_3</math>) substrate form a lattice-mismatched misfit system.</p> <p><b>Epitaxial growth of gallium nitride thin films on A-plane sapphire by molecular beam epitaxy, Center for Photonics Research, College of Engineering, Boston University, Boston, Massachusetts, Journal of Applied Physics, Vol. 85, No. 7, 1 April 1999.</b></p> <p><b>I. INTRODUCTION</b></p> <p>The lack of good quality GaN substrates led to investigation into several different substrates for epitaxial growth of GaN, of which, C-plane (0001) sapphire is the most widely studied substrate. Due to the large lattice mismatch (<math>\sim 14\%</math>), several approaches have been adapted to optimize the nucleation and growth of GaN layers on these substrates. Amano</p>
said substrate having at least one of a group consisting of group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire; and	<p><i>Accused component: The LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The substrate is sapphire.</i></p> <p>The substrate is sapphire. The chemical formula of sapphire is aluminum oxide, <math>\text{Al}_2\text{O}_3</math>.</p>

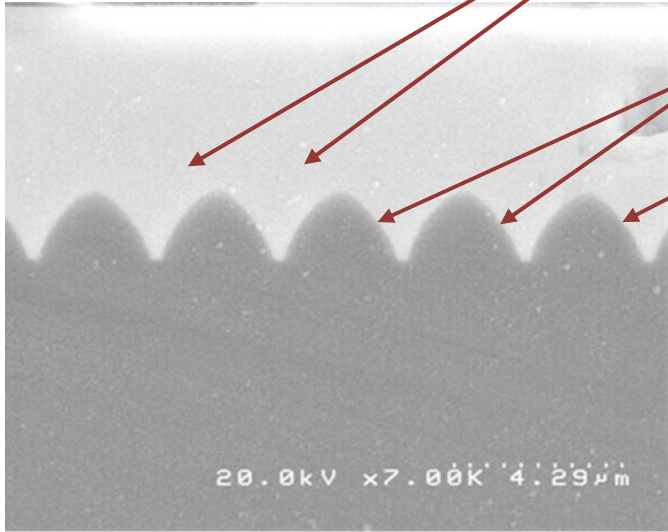
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
<p>a light-emitting structure containing an active layer disposed on said first layer, whereby said plurality of inclined lower portions are configured to guide extended lattice defects away from propagating into the active layer.</p>	<p><i>Accused component: The LED in the lamp.</i>  <i>Basis of Infringement Contention: The light-emitting structure containing an active layer is disposed on said first layer. The first layer comprises a plurality of inclined lower portions so as to guide extended lattice defects away from propagating into the active layer.</i></p> <p>The light-emitting structure containing an active layer is disposed on said first layer.</p> <p><b>Illumination With Solid State Lighting Technology, Daniel A. Steigerwald, et al., <i>IEEE Journal on Selected Topics in Quantum Electronics</i>, Vol. 8, No. 2, March/April 2002.</b></p> <p><b>IV. HIGH POWER LED NITRIDE FLIP-CHIP TECHNOLOGY</b></p> <p><b>A. Conventional Indicator LED Device Structures</b></p> <p>The bulk of commercially available GaN-based devices are grown on sapphire substrates. LEDs have a cross section similar to that depicted in Fig. 8. n-type GaN layers are grown on the substrate, an active layer is grown on top of this, and p-GaN layers are then grown over the top of the structure. Part of the p-GaN and active layers are etched away to reveal and allow the formation of an electrical contact to the underlying n-GaN layers. Light is extracted from these devices through the uppermost p-GaN layers. However, the limited conductivity of</p>

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	 <p>Fig. 8. Diagrammatic cross section through a standard, commercially available GaN-based LED. Light is extracted through a partially absorbing Ni–Au-based layer which acts as both hole-spreading layer and a hole injecting contact to the p-GaN.</p>

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

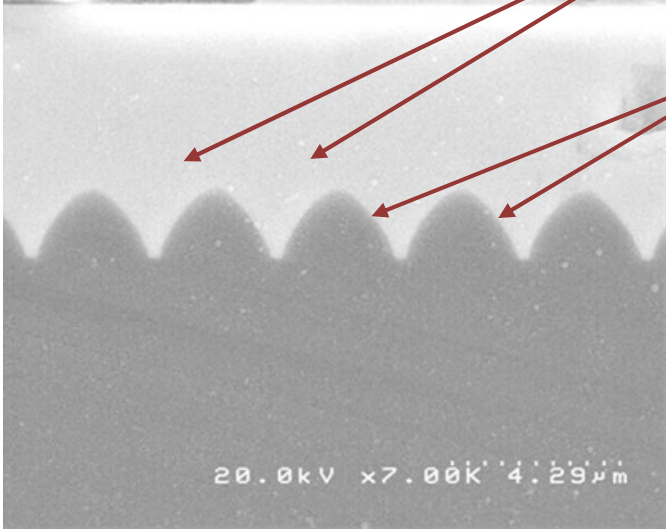
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
	<p data-bbox="575 282 1864 373">The first layer has a plurality of inclined lower portions configured to guide extended lattice defects away from propagating into the active layer.</p>  <p data-bbox="575 977 2003 1045">Plaintiff contends that the inclined lower portions of the first layer disposed on the textured district used in Defendant's LEDs are configured to guide extended lattice defects away from propagating into the active layer.</p>
2. The device of claim 1, wherein said first layer has an upper planar portion with low defect density.	The upper planar portion has low defect density in two respects. First, the defect density in the upper planar portion is lower than the defect density in the lower portion of the layer. Second, the defect density in the upper planar portion is lower than the defect density would have been in the absence of the textured district. The curved side face reduces dislocation density. <i>See, e.g.,</i> U.S. Patent No. 7,759,140 at 6:52-55.
15. A semiconductor light-emitting device comprising:	See claim 1 above.
a substrate;	See claim 1 above.

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
a textured district defined on the surface of said substrate	See claim 1 above.
comprising a plurality of etched trenches having a sloped smooth etching profile without sharp corners and without a prescribed angle of inclination;	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The textured district comprises a plurality of etched trenches having a sloped smooth etching profile without sharp corners and without a prescribed angle of inclination.</i></p> <div data-bbox="573 483 1869 1206">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>Sloped smooth etching profile (the smooth etched sloped sides of the trench)</p> <p>Without a prescribed angle of inclination (the sloped etching profile is without a constant angle of inclination)</p> </div>
a first layer disposed on said textured district	See claim 1 above.
comprising a plurality of inclined lower portions,	See claim 1 above.

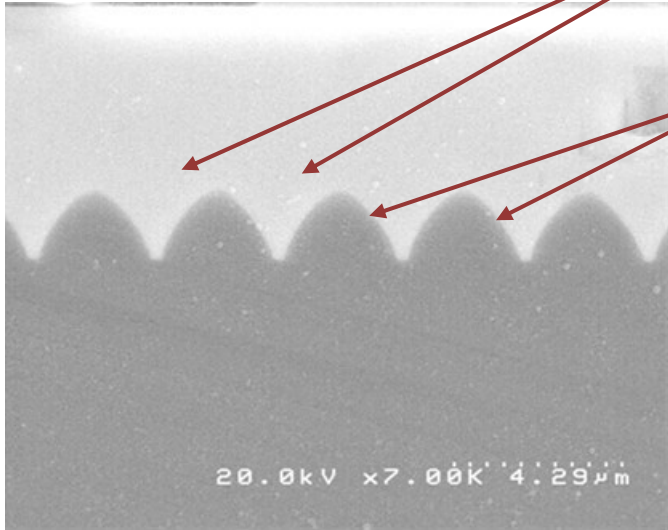
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

<b>Claim Limitation</b>	<b>Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K</b>
said first layer and said substrate form a lattice-mismatched misfit system,	See claim 1 above.
said substrate having at least one of a group consisting of group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire; and	See claim 1 above.
a light-emitting structure containing an active layer disposed on said first layer, whereby said plurality of inclined lower portions are configured to guide extended lattice defects away from propagating into the active layer.	See claim 1 above.

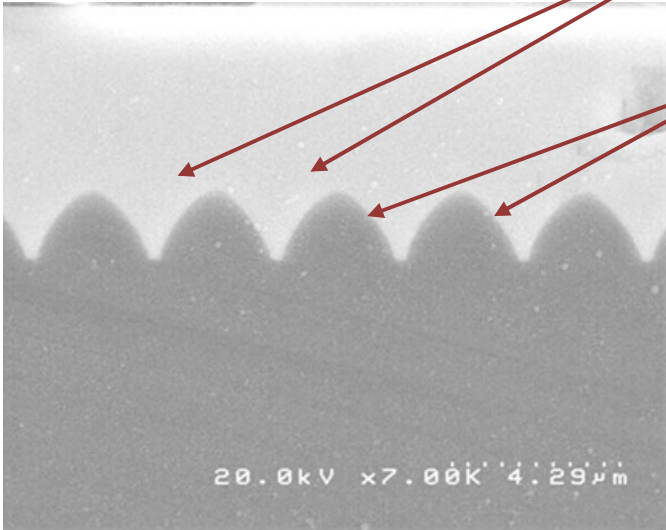
Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
16. The device of claim 15, wherein the sides of said etched trenches are smooth.	<p data-bbox="575 280 1919 350"><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i> <i>Basis of Infringement Contention: The sides of said etched trenches are smooth.</i></p> <div data-bbox="575 402 1850 1094"><p data-bbox="1356 402 1850 586">Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p><p data-bbox="1356 610 1730 643">Sides of trenches are smooth.</p><p data-bbox="785 1024 1199 1052">20.0kV x7.00k 4.29µm</p></div>



CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Bulbrite 770591 T6 4.5W LED G9 2700K

Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
<p>17. The device of claim 15, wherein the sides of said etched trenches are without sharp corners.</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The sides of said etched trenches are without sharp corners.</i></p> <div data-bbox="573 381 1915 1058"><p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p><p>The sides of said etched trenches are without sharp corners.</p><p>20.0kV x7.00k 4.29µm</p></div>



Claim Limitation	Accused Instrumentalities: Bulbrite 770591 T6 4.5W LED G9 2700K
<p>18. The device of claim 15, wherein the sides of said etched trenches are without a prescribed angle of inclination.</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The sides of said etched trenches are without a prescribed angle of inclination.</i></p> <div data-bbox="575 532 1236 1058"></div> <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>The sides of said etched trenches are without a prescribed angle of inclination.</p>